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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
MCGAW, MICHAEL M	
ART UNIT	**PAPER NUMBER**
1648	

DATE MAILED: 07/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/930,915	BIRKETT, ASHLEY J.	
	Examiner	Art Unit	
	Michael M. McGaw	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,12-33,35-38 and 42-78* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,12-33,35-38 and 42-78* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This office action is responsive to applicant's correspondence dated April 19, 2004. Thus, claims 1-9, 12-33, 35-38 and 42-78 are pending and under examination.

Please note that the examiner assigned to examine this application has changed. The previous examiner indicated that claims 2-9, 12-17, 19-33, 35-38 and 42-78 were free of the prior art. Upon further consideration, and in view of additional references as cited below, it is the present examiner's position that these claims are not free from the prior art. Consequently, a non-final rejection is being issued to address the new grounds for rejection asserted below.

Claim Rejections - 35 USC § 112, ¶2

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9, 12-33, 35-38 and 42-78 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are replete with ambiguities making meaningful interpretation difficult at best. The claims also contain numerous errors. The wording of the claims, including the grammatical structure and most importantly the liberal usage of 'or' within the claims, renders them subject to numerous possibilities in their application.

Applicant uses the phrase "conservatively substituted" in independent claims 1, 18, 42, 63, 75 and 78. With the exception of claims 51-62, all other claims are

dependent upon those five aforementioned independent claims. Applicant provides inconsistent definitions for this term in the specification. The definition on page 18 states "[t]he term 'conservative substitution' as used herein denotes that one amino acid residue has been replaced by another, biologically similar residue." It is not exactly clear what applicant means by biologically similar, though the subsequent examples do provide some guidance. Then on page 48 applicant tells us:

> Where a HBc sequence is truncated at the C-terminus beyond position 149 or at the N-terminus, or contains one or more deletions in the immunogenic loop, the number of substituted residues is proportionally different because the total length of the sequence is less that 149 residues. ***Deletions elsewhere in the molecule are considered conservative substitutions for purposes of calculation.*** (emphasis added)

To say that a deletion is a conservative substitution is not consistent with the prior definition requiring that one amino acid is replaced by another, biologically similar residue.

It is also not clear as to which sequence one compares to determine a conservative substitution. A generic HBc sequence is about 185 residues in length. On page 47 of the specification applicant discusses numerous sequences. It appears that the preferred sequence is that of subtype *ayw* from positions 1 to 149, but the applicant in no way limits himself to that sequence. Furthermore, applicant makes even this more vague when he indicates that this will be less any truncations due to terminal deletions.

To then provide that portions of different sequences from different mammalian HBc proteins may be used really makes the issue hopelessly muddied.

In claim 1, part (c) it says that the chimer "contains a sequence of at least 5 amino acid residues from HBc position 135 to the HBc C-terminus..." It is not at all clear what is meant by this limitation. Furthermore, the HBc C-terminus is at approximately residue 185. Thus, it could be read as merely dictating a contiguous sequence of 5 residues from somewhere in the HBc sequence from position 135 to 185. In part 1(a) of the claim it states that we have "an HBc sequence of at least about 130 of the N-terminal 150 amino acid residues..." So one could envision having the HBc sequence from residues 1-130 and then residues 174-178. It is known that residues ~130-150 are critical to form dimers. Pumpens et al (1995), as included by applicant as A16 on the information disclosure statement (IDS), says on page 66 that "[t]he C-terminal border for HBc sequences required for self-assembly [is] located between amino acids residues 139 and 144." Furthermore, if we include 174-178 we will have an Arginine-rich region which would potentially create nucleic acid binding. Is this merely meant to include a vast number of inoperable molecules within the scope of the claim or is the examiner misreading the limitation?

Likewise, it is not clear what applicant is claiming in claims 18, 42, 63, 75 and 78. For example, in claim 18 applicant states that "Domain IV comprises zero through fourteen residues of a HBc amino acid residue sequence from position 136 through 149 peptide-bonded to the residue of position 135 of Domain III..." If the molecule contains

zero residues from this region then they are missing the region mentioned above that is so critical for dimerization.

In claims 1, 18, 51, 63 and 75 applicant states that there is a "heterologous linker residue ... in the HBc immunodominant loop..." or simply a "heterologous linker residue". In the context of a single residue, how does one determine that this is 'heterologous', especially when one allows for conservative substitutions within the HBc sequence? Also, as is pointed out more fully below, the immunodominant loop already contains numerous residues that could be used as linker residues. Why then would one want to add additional linker residues?

The terms "of at least about" and/or "up to about" in claims 1, 18, 28, 63 and 68 are relative terms which render the claim indefinite. These terms are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention. Appropriate correction is required.

Claim 19 recites that the molecule contains "two heterologous epitopes." Where claim 18 contains a linker residue the molecule would not contain a first heterologous epitope. Or does applicant mean that the molecule has both a linker residue and two heterologous epitopes?

Claim 66 recites the limitation "a second heterologous epitope" in reference to claim 63. There is insufficient antecedent basis for this limitation in the claim. Claim 63 does not necessary contain a heterologous epitope.

Claim 70 recites the limitation "said B cell epitope" in reference to claim 68. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 12-18, 36-38, 51-60, 63-65, 68-71 are rejected under 35 U.S.C. 102(b) as being anticipated by Zlotnick et al. (1997) (Cited on applicant's IDS as A29).

Applicant claims a recombinant hepatitis B core (HBc) protein molecule up to about 515 amino acid residues in length that contains an HBC sequence of at least about 130 of the N-terminal 150 amino acid residues of the HBc molecule that includes a heterologous linker residue for a conjugated epitope present in the HBC immunodominant loop, contains one to ten cysteine residues toward the C-terminus of the molecule from the C-terminal residue of the HBC sequence and within about 30 residues from the C-terminus of the chimer molecule [C-terminal cysteine residue(s)], contains a sequence of at least 5 amino acid residues from HBC position 135 to the HBC C-terminus, said chimer molecules containing no more than 20 percent conservatively substituted amino acid residues in the HBC sequence, self-assembling into particles that are substantially free of binding to nucleic acids on expression in a host cell, and said particles being more stable than are particles formed from an

otherwise identical HBC chimer that lacks said C-terminal cysteine residue(s) or in which a C-terminal cysteine residue present in the chimer molecule is replaced by another residue. Applicant, on page three of the specification, describes the immunodominant loop region as being at about residues 70-90.

Zlotnick et al. teach a recombinant hepatitis B core (HBc) protein molecule of less than 515 amino acid residues in length that contains an HBC sequence of at least about 130 of the N-terminal 150 amino acid residues of the HBc molecule that includes residues that can be used as linkers for a conjugated epitopes present in the HBC immunodominant loop. Zlotnick's recombinant hepatitis B core (HBc) protein molecule contained one cysteine residue at the C-terminus of the molecule. Zlotnick's recombinant hepatitis B core (HBc) protein molecule contained a sequence of about 15 amino acid residues from HBC position 135 to the HBC C-terminus. It is reasonable to conclude that Zlotnick's recombinant hepatitis B core (HBc) protein molecule contained no substitutions, with the exception of the C-terminal cys residue. Zlotnick's recombinant hepatitis B core (HBc) protein molecule self-assembled into particles (pg. 9558; 1st full paragraph) that are substantially free of binding to nucleic acids on expression in a host cell (pg. 9560; last full paragraph), and said particles being more stable than are particles formed from an otherwise identical HBC chimer that lacks said C-terminal cysteine residue(s) or in which a C-terminal cysteine residue present in the chimer molecule is replaced by another residue (pg. 9558; 1st and 2nd full paragraphs).

Zlotnick's linker residues were not heterologous. It is not apparent why it should be of significance that the residues found in the immunodominant loop should, in fact,

be heterologous when the immunodominant loop already contains many of the linker residues as recited in claim 17. Applicant, on page three of the specification, describes the immunodominant loop region as being at about residues 70-90. While it was not disclosed which subtype Zlotnick was working with, if one assumes for the purposes of example that Zlotick utilized subtype *ayw*, then there would be linker residues at positions 70 (Tyr), 77 (Glu), 78 (Asp) and 83 (Asp). Additional linkers might also be available at 60 (Cys), 91 (Tyr), and 96 (Lys).

Claims 51-60 are further rejected under 35 U.S.C. 102(b) as being clearly anticipated by Zlotnick et al. (1997).

Applicant claims an immunogenic particle comprising recombinant hepatitis B core (HBc) protein molecule displaying one or more immunogenic epitopes at the N-terminus, HBC immunogenic loop or C-terminus and containing a cysteine residue at or near the C-terminus, said particle being substantially free of nucleic acid binding and exhibiting enhanced stability relative to particles comprised of otherwise identical proteins that are free of said cysteine residue.

Zlotnick teaches an immunogenic particle comprising recombinant hepatitis B core (HBc) protein molecule containing a cysteine residue at or near the C-terminus, said particle being substantially free of nucleic acid binding and exhibiting enhanced stability relative to particles comprised of otherwise identical proteins that are free of said cysteine residue as described more fully above. It is an inherent property of a hepatitis B core (HBc) protein molecule that it displays one or more immunogenic

epitopes at the N-terminus, HBc immunogenic loop or C-terminus. These regions are known to be highly immunogenic (See for instance Pumpens (1995) page 70, col. 1 discussing mapping using Mabs). Such a particle would not bind DNA (meeting the limitation of claim 52), would have immunogenic epitopes at all termini (claims 53-55) and displays B and T cell epitopes (claims 56-58).

Claims 1-8, 18, 27-28, 32-33, 42, 63, 75 are rejected under 35 U.S.C. 102(b) as being anticipated by Ireland et al. (U.S. Patent No. 5,990,085).

Applicant claims a recombinant chimer hepatitis B core (HBc) protein molecule up to about 515 amino acid residues in length that (a) contains an HBC sequence of at least about 130 of the N-terminal 150 amino acid residues of the HBc molecule that include a peptide-bonded heterologous epitope or a heterologous linker residue for a conjugated epitope present in the HBC immunodominant loop, contains one to ten cysteine residues toward the C-terminus of the molecule from the C-terminal residue of the HBC sequence and ***within about 30 residues*** from the C-terminus of the chimer molecule [C-terminal cysteine residue(s)], contains a sequence of at least 5 amino acid residues from HBC position 135 to the HBC C-terminus, said chimer molecules containing no more than 20 percent conservatively substituted amino acid residues in the HBC sequence, self-assembling into particles that are substantially free of binding to nucleic acids on expression in a host cell, and said particles being more stable than are particles formed from an otherwise identical HBC chimer that lacks said C-terminal

cysteine residue(s) or in which a C-terminal cysteine residue present in the chimer molecule is replaced by another residue.

Ireland et al. teach an inhibin-HBc fusion protein molecule of less than 515 amino acid residues in length that contains an HBC sequence of at least about 130 of the N-terminal 150 amino acid residues of the HBc molecule. This protein molecule included a peptide-bonded heterologous epitope (ie. the inhibin insertion), contained one cysteine residue toward the C-terminus of the molecule from the C-terminal residue of the HBC sequence and within about 30 residues from the C-terminus of the chimer molecule [C-terminal cysteine residue(s)]. It contained a sequence of at least 5 amino acid residues from HBC position 135 to the HBC C-terminus. One of Ireland's HBc chimeras utilized an internal insertion site at amino acid position 78 (see col.7, line 41). This chimera had a C-terminal truncation, ending at position 144 relative to the HBc sequence.

Zhou et al. (1992) *Journal of Virology,* 66(9):5393-98 is cited as evidence that HBC has four Cys residues, one of which is located at position 107. Consequently, where a chimer, such as Ireland's inhibin-HBc fusion chimer, has a c-terminal truncation without the addition of exogenous amino acids, a Cys reside would be present 37 amino acids from the C-terminal end. Therefore, Ireland satisfies the limitation that there be a Cys residue "about 30 residues from the C-terminus of the chimer molecule."

Ireland indicates on line 65 of column 7 that the inhibin-HBc fusion protein self-assembled. It seems reasonable to conclude that such particles with the Cys residue present at position 107 would be more stable than those in which the Cys is absent in the absence of evidence to the contrary. Likewise, it is reasonable to assume that the

limitation recited in claim 42 directed to the ratio of absorbance would be met. For the aforementioned reasons, Ireland's inhibin-HBc fusion reads on the present invention as claimed in claims 1-8, 18, 27-28, 32-33, 42, 63 and 75.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-9, 12-33, 35-38, 42-78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pumpens et al. 1995 in view of Zlotnick et al (1997).

Applicant claims a recombinant chimer hepatitis B core (HBc) protein molecule up to about 515 amino acid residues in length that (a) contains an HBC sequence of at least about 130 of the N-terminal 150 amino acid residues of the HBc molecule that includes a peptide-bonded heterologous epitope, contains one to ten cysteine residues toward the C-terminus of the molecule from the C-terminal residue of the HBC sequence and within about 30 residues from the C-terminus of the chimer molecule [C-terminal cysteine residue(s)], contains a sequence of at least 5 amino acid residues from HBC position 135 to the HBC C-terminus, said chimer molecules containing no more than 20 percent conservatively substituted amino acid residues in the HBC sequence, self-assembling into particles that are substantially free of binding to nucleic acids on expression in a host cell, and said particles being more stable than are

particles formed from an otherwise identical HBC chimer that lacks said C-terminal cysteine residue(s) or in which a C-terminal cysteine residue present in the chimer molecule is replaced by another residue.

Pumpens teaches recombinant chimer molecules of a variety of lengths up to about 515 amino acid residues in length. These chimers contain an HBC sequence of at least about 130 of the N-terminal 150 amino acid residues of the HBc molecule (See for instance Fig. 1, pg. 64) that include a peptide-bonded heterologous epitope (Table 1, page 66) or a heterologous linker residue for a conjugated epitope present in the HBC immunodominant loop (see page 69, col. 1, last paragraph). Pumpens discloses that HBc chimeras with c-terminal truncations are capable of self-assembly and do not bind or 'pack' nucleic acid. (page 67, col. 1).

Pumpens makes two critical points on page 67. First, Pumpens reports that "capsids formed by C-terminally truncated HBc monomers are less stable than the corresponding full-length protein particles." Second, that "foreign insertions [at this site] are not only possible but also exert a stabilizing effect on chimeric HBCΔ derivatives..." Pumpens does not teach adding a c-terminal cysteine residue to achieve the stabilizing effect.

Zlotnick et al. (1997) teach adding a c-terminal cysteine residue to achieve a stabilizing effect.(See pgs. 9556 and 9558) Zlotnick's HBc chimera contained the HBc sequence from position 135-149 with a terminal cysteine at position 150, thus meeting the dual limitations of a chimer that contains (1) a sequence of at least 5 amino acid residues from HBC position 135 to the HBC C-terminus and one to ten cysteine

residues toward the C-terminus of the molecule from the C-terminal residue of the HBC sequence and within about 30 residues from the C-terminus of the chimer molecule [C-terminal cysteine residue(s)]. Zlotnick clearly demonstrates that the c-terminal particles are more stable than are particles formed from an otherwise identical HBC chimer that lacks said C-terminal cysteine residue(s) (see page 9558, col. 1, first and second full paragraphs). Zlotnick also had residues that could be used as linkers for a conjugated epitope and "immunogenic epitopes" as mentioned previously in the section directed to Section 102(b).

One of ordinary skill in the art would have been motivated to combine the teachings of Pumpens with that of Zlotnick because it was well known that HBc chimeras with c-terminal deletions, while still capable of self-assembly, were less stable than their full-length counterparts and that by adding back amino acid residues to these c-terminal deletion one could achieve a more stable chimera, while Zlotnick teaches that the addition of a cysteine residue to an HBc c-terminal truncation results in enhanced stability.

One of ordinary skill in the art would have expected achieve a more stable HBc chimera with a c-terminal truncation by the addition of a cysteine residue because Zlotnick teaches that the addition of a cysteine to the c-terminal of an HBc molecule with a c-terminal truncation results in enhanced stability.

Therefore the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made.

The combination above meets the limitations as found in claims 1, 2, 9, 12-18, 24, 32, 33, 36-38, 42, 45, 51-60, 63-66, 68-71, 75 and 78. Additionally, Pumpens further describes elements of HBc chimeras that are found as limitations in the dependent claims. For instance, Pumpens teaches both heterologous epitopes and linker residues for a conjugated epitope as outlined above. This is relevant to claims 2, 12, 13, 14, 15 and 16. See also table 2, on page 67, for linker residues at the internal insertion site. As to claims 3, 43 and 67, Pumpens teaches that the heterologous epitope can be a B-cell epitope. (See page 71, col. 1) As to claims 4, 8, 25, 26, 29, 35, 48, 49 and 50, Pumpens teaches that heterologous epitopes can be peptide bonded to the n-terminal region (page 70, col. 1) or the other regions. These can be B-cell epitopes or T-cell epitopes. (See page 71, col. 2, final paragraph). Pumpens teaches the internal insertion site, frequently referred to as the immunodominant loop. This is relevant to claims 5, 6, 70 and 71, among others. As to claims 19-23, 69, 72-74 Pumpens teaches that HBc can contain multiple heterologous epitopes. (See page 71, col. 1, second full paragraph) As to claims 28, 30-31, 44, 45, 65 and 68, Pumpens teaches that HBc chimeras can handle a wide range of insert sizes. Pumpens teaches sizes including ones as small as 7 residues. As to claim 47, Table 1 (page 66) of Pumpens et al (1995) indicates that HBc has been used to display epitopes from HIV.

Claims 61, 62, 76 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thornton et al. (U.S. Patent No. 5,143,726) in view of Zlotnick et al (1997).

Applicant claims an immunogenic particle wherein the linker residue is conjugated to a hapten. Said hapten can be an oligosaccharide.

Thornton et al. teach the use of HBc as an immunogenic carrier molecule where a polypeptide is linked to the carrier/core molecule through an amino acid side chain on the core molecule (see abstract). Thornton indicates that the epitope can be glycosylated (see col. 9, line 13).

Zlotnick et al. teach a recombinant hepatitis B core (HBc) protein molecule (immunogenic particle) with a C-terminal cysteine as variously described above (see particularly the section relating to 102(b)). Zlotnick teaches that these molecules are capable of assembling into capsids and that they are more stable than molecules without the C-terminal cysteine residue (pg. 9558). Zotnick also indicates that these C-terminal truncations with the cysteine residue do not package RNA within their capsids.

One of ordinary skill in the art would have been motivated to combine the teachings of Thornton with that of Zlotnick because Zlotnick teaches that a truncated molecule loses the ability to pack endogenous nucleic acid while the addition of the C-terminal cysteine greatly enhances the stability of the resulting truncated particles. One of ordinary skill in the art would have expected achieve a more stable HBc molecule that could present an epitope via a side-chain with a greatly diminished risk of carrying nucleic acids from the cell in which the particles were produced. Therefore the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made.

Double Patenting

Claims 1-78 (exclusive of cancelled claims) are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-46 of copending Application No. 10/732,862. Although the conflicting claims are not identical, they are not patentably distinct from each other because instant claims 1-69 are drawn to the same subject matter, e.g., recombinant chimer HBC protein molecules that have C-terminal cysteines, self-assemble into particles, and have improved particle stability, as are claims 1-46 of 10/732,862, differing only in scope.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

All claims pending and under examination (claims 1-9, 12-33, 35-38 and 42-78) are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael M. McGaw whose telephone number is (571) 272-2902. The examiner can normally be reached on Monday through Friday from 8 A.M. to 5 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Housel can be reached on (571) 272-0902. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M. McGarth

Wednesday, July 21, 2004

Mary Mosher

MARY E. MOSHER
PRIMARY EXAMINER
GROUP ~~1800~~ 1600